

Roehr Chemicals, Inc.
Draft Upland Site Summary

ROEHR CHEMICALS, INC. (DAR SITE ID #42)

Address: 52-28 37th Street Long Island City, Queens, 11101
(also known as 32-10 Greenpoint Avenue, 52-20 37th Street, 52-22 37th Street and 36-19 Starr Avenue)

Tax Lot Parcel(s): Queens Block 310, Lots 1, 8, 23, 24, and 28

Latitude: 40.734756

Longitude: -73.935396

Regulatory Programs/
Numbers/Codes: USEPA ID No. NYD000764936, TRI ID No. 11101RHRCH52203, NYSDEC IHWDS ID No. 241014, PBS ID No. 2-005398, CBS No. 2-000014, NYSDEC Spill Nos. 9005231, 8907364, 8709604, 8906125, and 8906126, NYSDEC Division of Air Resources ID No. 630000X0RL

Analytical Data Status: ☐ Electronic Data Available ☒ Hardcopies only
☐ No Data Available

1 SUMMARY OF CONSTITUENTS OF POTENTIAL CONCERN (COPCs) TRANSPORT PATHWAYS TO THE CREEK

The current understanding of the transport mechanisms of constituents of potential concern (COPCs) from the upland portions of the Roehr Chemicals, Inc., site (site) to Newtown Creek is summarized in this section and Table 1 and supported in following sections.

Overland Transport

The site is approximately 1,200 feet west of Newtown Creek. This is not a complete current or historical pathway.

Bank Erosion

The site is not adjacent to Newtown Creek. This is not a complete current or historical pathway.

Groundwater

Groundwater has been encountered at the site at approximately 30 feet below ground surface (bgs) and flows to the southwest toward Calvary Cemetery. Perched groundwater has been encountered in some areas of the site at approximately 20 feet bgs. Xylene, acetone, and ethylbenzene have been detected in samples collected from on-site monitoring wells. These contaminants have been attributed to historical releases from an on-site wastewater treatment system and underground storage tanks (USTs; NYSDEC 2001).

Chlorinated solvents (tetrachloroethylene [PCE], trichloroethylene [TCE], and dichloroethylene [DCE]) have also been detected in groundwater at the site. These contaminants have been attributed to an off-site source because an on-site source was not identified during remedial investigations (NYSDEC 2001; SMC 2001). A dry cleaning business operated on the northern portion of the site in the 1970s and 1980s (Sanborn 1970, 1979, 1986).

A xylene plume has been delineated and shown to be migrating in a southerly direction beneath Calvary Cemetery (NYSDEC 2001). Xylene and ethylbenzene were detected in samples collected from a downgradient monitoring well (MW-11 shallow [S]) in 2011 (Arcadis 2011). This is a complete historical pathway. There is insufficient evidence to make a current pathway determination.

Overwater Activities

The site is not adjacent to Newtown Creek. Information regarding overwater activities was not identified in documents available for review. This is not a complete current or historical pathway.

Stormwater/Wastewater Systems

From 1965 to 1991 the site discharged wastewater to the combined sewer in 37th Street (Olenberg 1988a). The discharge was unregulated until 1990 when the New York City Department of Environmental Protection (NYCDEP) directed the site to comply with U.S. Environmental Protection Agency (USEPA) standards and NYCDEP Sewer Use Regulations (Klein 1988; NYCDEP 1990b). On several occasions benzene, ethylbenzene, methylene chloride, and chloromethane concentrations in the discharge exceeded these

standards (NYCDEP 1989a; Olenberg 1988b). In 1989 and 1990 NYCDEP responded to spills at the site, which resulted in releases of organic solvents, including toluene and ethylbenzene, to the municipal sewer (EDR 2010). The site ceased manufacturing operations and process water discharges to the municipal sewer in 1991 (Olenberg 1991). On-site stormwater and wastewater infrastructure was removed in the early 1990s during site remediation (SMC 2001). The on-site stormwater and wastewater infrastructure of the current site occupants was not included in documents available for review. There is insufficient evidence to make a historical or current pathway determination.

This site is within the Bowery Bay Water Pollution Control Plant (WPCP) sewershed. Stormwater and wastewater discharges from the site flow into a combined municipal sewer system. When the combined flows exceed the system's capacity, untreated combined sewer overflows (CSOs) are discharged to Newtown Creek (NYCDEP 2007). To the extent that wastewater discharges were coincident with CSO events, this pathway is historically complete. It is not known if other means of direct or private discharge from the site exist. There is insufficient evidence to make a current pathway determination.

Air Releases

Historical pharmaceutical manufacturing and remediation systems resulted in air emissions from the site. Air permits were issued to the site by the New York State Department of Air Resources in the 1980s (Riordan 1986) and 1990s (NYSDEC 2011; SMC 2001). In 1990 the site released 10 tons of hydrochloric acid, 500 tons of methanol, and 50,357 tons of xylene to the atmosphere via point and non-point emissions (USEPA 1990). No further information regarding emissions from the site was identified in documents available for review. There is insufficient evidence to make a current or historical pathway determination.

2 PROJECT STATUS

The site is currently listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites as a "Class 4" site (i.e., the site has been properly closed but requires continued site management, consisting of operation maintenance and monitoring). The site was classified as a Resource Conservation and Recovery Act (RCRA) large quantity generator (LQG) in 1980 and 1991 and a conditionally exempt small quantity generator in 2006 and

2007 (EDR 2010). A summary of investigation and remedial activities at the site is provided in the following table:

Activity		Date(s)/Comments
Phase 1 Environmental Site Assessment	<input type="checkbox"/>	
Site Characterization	<input checked="" type="checkbox"/>	A Preliminary Site Assessment (PSA) was conducted in 1993 and 1994 by Land Tech Remedial, Inc. (LTR), for Aceto Corporation (Aceto). The PSA was completed per the requirements of Consent Order #D2-0005-93-04 between Aceto and New York State Department of Environmental Conservation (NYSDEC) signed June 7, 1993 (LTR 1994a). A supplemental PSA was conducted in summer 1994 by LTR (LTR 1994b).
Remedial Investigation	<input checked="" type="checkbox"/>	The Remedial Investigation and Feasibility Study (RI/FS) was conducted by SMC Environmental in accordance with the requirements of Consent Order #D2-0002-96-11, which was signed by Roehr Chemicals, Inc. (Roehr) and NYSDEC and effective March 31, 1997. The order required Roehr to implement a full remedial plan including RI/FS (SMC 2001; NYSDEC 2001).
Remedy Selection	<input checked="" type="checkbox"/>	A Record of Decision (ROD) was prepared by the NYSDEC in consultation with the New York State Department of Health (NYSDOH) and required the site to design and implement an Operations, Maintenance, and Monitoring (OM&M) plan to ensure that the interim remedial measures (IRM), including air sparging (AS) and soil vapor extraction (SVE) systems, continued to operate at the site. Quarterly groundwater monitoring was also required (NYSDEC 2001).
Remedial Design/Remedial Action Implementation	<input checked="" type="checkbox"/>	
Use Restrictions (Environmental Easements or Institutional Controls)	<input checked="" type="checkbox"/>	Vapor mitigation, groundwater use restriction, and legacy restrictions exist for the site (EDR 2010).
Construction Completion	<input checked="" type="checkbox"/>	IRM, including AS and SVE systems, were installed between 1993 and 1999 (NYSDEC 2001).
Site Closeout/No Further Action Determination	<input type="checkbox"/>	

Notes:

Aceto – Aceto Corporation

AS – air sparing

IRM – interim remedial measures

LTR – Land Tech Remedial, Inc.

NYSDEC – New York State Department of Environmental Conservation

NYSDOH – New York State Department of Health

OM&M – operations, maintenance, and monitoring

PSA – Preliminary Site Assessment

RI/FS – Remedial Investigation and Feasibility Study

ROD – Record of Decision

Roehr – Roehr Chemicals, Inc.

SVE – soil vapor extraction

- NYSDEC Site Code(s): Inactive Hazardous Waste Site ID: 241014;
- NYSDEC Site Manager: Sondra Martinkat

3 SITE OWNERSHIP HISTORY

Respondent Member:

☐ Yes ☒ No

Owner	Years	Occupant	Type of Operation
Lot 1			
Unknown		Stone cutter (ca.1898 – 1911)	
		Vacant (ca.1936 – 1965)	
		Unknown	Manufacturing pharmaceuticals and pharmaceutical intermediates (1965 – 1991)
Guido Mari, Adele Mari & Esta Witczak	1977 – 1979	Roehr Chemical as a subsidiary of the Aceto Corporation (1972 – 1992)	
Acci Realty (subsidiary of Aceto)	1979 – 1998	Unknown (1992 – 1998)	Unknown (1991 – 1998)
Amanda APP – Morgan, Inc.	1998 – present	Unknown	Unknown

Owner	Years	Occupant	Type of Operation
Lot 8			
Unknown		Stables and residence (ca. 1898 – 1903)	
		Movie theatre (ca. 1911 – 1917)	
		Vacant (ca.1936 – 1950)	
		Dry cleaner (ca.1970 – 1986)	
Unknown		Roehr Chemical (1965 – 1972)	Manufacturing pharmaceuticals and pharmaceutical intermediates (1965 – 1991) Unknown (1991 – present)
		Roehr Chemical as a subsidiary of the Aceto Corporation (1972 – 1992)	
Anthony M. Delia (executor of Lucy Delia)	Unknown – 1973	Roehr Chemical as a subsidiary of the Aceto Corporation (1972 – 1992) Unknown (1992 – present)	
Mill-Dan Realties Corporation	1973 – 1978		
Arnold Salinas, Julio Gerrero, Adolfo Hinojaso and Hector E. Lazo	1997		
Hector E. Lazo	1998 – present		

Owner	Years	Occupant	Type of Operation
Lot 23			
Unknown		Stone cutting (ca. 1898 – 1917)	
		Vacant (1936 – 1950)	
Unknown		Roehr Chemical (1965 – 1972)	Manufacturing pharmaceuticals and pharmaceutical intermediates (1965 – 1991) Unknown (1991 – present)
		Roehr Chemical as a subsidiary of the Aceto Corporation (1972 – 1992)	
William E. Frick Sr.	Unknown – 1973	Roehr Chemical as a subsidiary of the Aceto Corporation (1972 – 1992) Unknown (1992 – present)	
William E. Frick Sr. and Anne C. Frick	1973 – 1974		
ACCI Realty Corp.	1974 – 1993		
Won Ton Food, Inc.	1993 – 2006		
37th Street LIC, Inc.	2006 – present		
Lot 24			
Unknown		Stone cutter (ca. 1898 – 1917)	
		Vacant (ca. 1936)	
Theodore Merkt	1946 – 1968	Unknown	
		Precious Metal Works (ca. 1947 – 1950)	Unknown
		Roehr Chemical (1965 – 1972)	Manufacturing pharmaceuticals and pharmaceutical intermediates (1965 – 1991)

Owner	Years	Occupant	Type of Operation
Hedwig Merkt	1968 – 1989	Roehr Chemical as a subsidiary of the Aceto Corporation (1972 – 1992)	Manufacturing pharmaceuticals and pharmaceutical intermediates (1965 – 1991)
ACCI Realty Corporation	1989 – 1993		
Won Ton Food, Inc.	1993 – 2006	Unknown (1992 – present)	Unknown (1991 – present)
37th Street LIC, Inc.	2006 – present		
Lot 28			
Unknown		Residence and granite polishing (ca. 1898 – 1903)	
		Residence, shed, and stonecutting (ca. 1911 – 1950)	
		Roehr Chemical as a subsidiary of the Aceto Corporation (1972 – 1992)	Manufacturing pharmaceuticals and pharmaceutical intermediates (1965 – 1991)
Mari & Witczak Corporation	1977	Roehr Chemical as a subsidiary of the Aceto Corporation (1972 – 1992)	Manufacturing pharmaceuticals and pharmaceutical intermediates (1965 – 1991)
Guido Mari, Adele Mari & Esta Witczak	1977 – 1979		
Acci Realty (subsidiary of Aceto)	1979 – 2002		
Wonton Food, Inc.	2002 – present	Unknown (1992 – present)	Unknown (1991 – present)
		Wonton Food, Inc.	Packaged food warehouse

Note:

ca. – circa

Discussion and sources provided in Section 6

4 PROPERTY DESCRIPTION

The site occupies approximately 0.56 acre on five tax lots. The site slopes gently down from approximately 38 feet above mean sea level in the eastern corner of the property on 37th Street to approximately 27 feet above mean sea level in the northern corner of the property on Greenpoint Avenue. Newtown Creek is located approximately 1,200 feet west of the site. With the exception of a paved loading dock located on Lot 28 (adjacent to 37th Street),

buildings occupy the entire site (addressed as 52-20 or 52-22 and 52-28 37th Street, 32-10 Greenpoint Avenue and 36-19 Starr Avenue). A 2010 aerial photograph of the site is included as Figure 1. Building addresses and tax lot boundaries are included on Attachment 1.

The site is adjacent to Greenpoint Avenue to the north and 37th Street to the south. Calvary Cemetery is located further south, across 37th Street from the site. The eastern and western adjoining properties are occupied by buildings and paved areas (see Figure 1). The area is zoned M1-1. M1 districts are buffers between M2 or M3 districts and adjacent residential or commercial districts and often include light industrial uses. Noise, vibration, smoke, odor, and other effects of industrial uses are regulated in M1 districts (NYCDP 2009).

5 CURRENT SITE USE

In 2010, Lot 28 was occupied by a packaged food warehouse (EDR 2010; NYCDP 2007). Additional information about current site use was not provided in documents available for review.

6 SITE USE HISTORY

Historically the site was divided into multiple lots. In 1898, the site was occupied by a stone cutting business, stables, and houses. Present-day 37th Street was named Howard Avenue and the present-day Calvary Cemetery across 37th Street/Howard Street was subdivided into vacant lots (Sanborn 1889). In 1911, Lot 8 was occupied by a movie theatre, stone cutting business, and houses (Sanborn 1911). Between 1911 and 1917, the property remained in similar uses. Calvary Cemetery was constructed across 37th Avenue from the site (Sanborn 1911-1917). Between 1925 and 1943, the stone cutting business and the movie theater closed. The residences remained at the site (Sanborn 1925-1943). By 1947, Precious Metal Works occupied a building located in present-day Lot 24. The remainder of the property was either vacant or in residential use (Sanborn 1947). A dry cleaning business operated on Lot 8 in the 1970s (Sanborn 1970, 1979, 1986).

Roehr Chemical, Inc. (Roehr) opened a pharmaceutical manufacturing plant on the site in 1965 (NYSDEC 2001). By the mid-1980s, the site occupied five tax lots (1, 8, 23, 24 and 28) and four buildings (addressed as 52-20 or 52-22 and 52-28 37th Street, 32-10 Greenpoint Avenue, and 36-19 Starr Avenue). Operations at the facility ended in 1991 and with the exception of Lot 28, the site was officially closed by the New York State Department of Environmental Conservation (NYSDEC) Hazardous Waste Division on August 25, 1992. Remedial activities continued on Lot 28 throughout the 1990s and early 2002 (SMC 2001; NYSDEC 2001). Wonton Foods, Inc., purchased Lot 28 in 2002 and stored packaged food on site (EDR 2010; NYCDCP 2007).

7 CURRENT AND HISTORICAL AREAS OF CONCERN AND COPCs

The current understanding of the historical and current potential upland and overwater areas of concern at the site is summarized in Table 1. A brief discussion of the potential sources and COPCs at the site is provided in this section.

Potential contaminant areas of concern the site include areas in which stone cutting and polishing, dry cleaning, metal works and pharmaceutical manufacturing operations occurred. Additional areas of concern include areas in which petroleum products and chemicals were stored and handled (e.g. USTs, aboveground storage tanks [ASTs], conveyance piping, trenches, and sumps). COPCs associated with these areas of concern include petroleum hydrocarbons, volatile organic compounds (VOCs), chlorinated volatile organic compounds (CVOCs), metals, phenolics, and semi-volatile organic compounds (SVOCs).

7.1 Uplands

A dry cleaning business operated on Lot 8 in the 1970s (Sanborn 1970, 1979, 1986). No additional information about this operation was identified in documents available for review.

Roehr manufactured pharmaceutical and pharmaceutical intermediates at the site from 1965 to 1991 (SMC 2001). Manufacturing occurred in four buildings on five lots. Roehr's operations included distillation, centrifugation, grinding, chemical reactions, washes, and

drying. Alkaline and acidic wastes from the cleaning production vessels were neutralized in an on-site wastewater treatment system and discharged to the sewer (NYSDEC 2001).

In 1980, the site submitted an Initial Notification of Hazardous Waste Activity to USEPA. The form indicated that the site generated F003 (spent solvent mixtures), U239 (xylene), U154 (methanol) and ignitable wastes (Reasenbergs 1980). The site was classified as an RCRA LQG (EDR 2010). Xylene from still bottoms, alcohol xylene filtrates, and mineral oil still bottoms were sold to Arynco in Carstadt, New Jersey, as fuel or disposed of by a waste hauler at an off-site facility (NYSDEC 2001). Approximately four to five drums were generated on a monthly basis (Saracco 1981). The site exceeded the allowable quantity of stored wastes (1,000 kilograms) and in 1986 was issued an RCRA violation (Riordan 1986).

In April 1987, NYCDEP conducted an investigation of the site in response to complaints by members of the public and determined that additional investigation was warranted (Cuozzo and Wong 1987). On July 17, 1987, NYCDEP issued an order requiring the site to construct dikes around existing storage tanks and drum storage areas, seal internal floor drains, pave drum storage areas (or remove drums), and provide a spill prevention and control plan (Klein 1987).

On October 19, 1989, NYCDEP issued Order 1443 to the site, requiring the site to submit information concerning xylene storage, including areas of historical storage and releases (NYCDEP 1989b). The site responded that prior to the installation of the 1,500-gallon UST in 1983, xylene was stored in 55-gallon drums and there was no documented spillage of xylene at the site (Olenburg 1989b).

In 1989, NYCDEP issued Order 1032 to the site. Corrective action required by the order involved submitting an inventory of all USTs (including historical USTs), their locations, and all chemicals stored in them (Olenberg 1989). Remaining wastes and equipment (including process equipment, USTs, stormwater, and wastewater collection and treatment systems) were removed from the site under NYSDEC supervision. The site was officially closed by NYSDEC Division of Hazardous Substances in 1992 and Lots 1, 8, 23, and 24 were sold or leased. Contaminated soils were identified beneath the floor of the Main Production Building on Lot 28 in December 1991, and as a result, that lot was not cleared for sale. Field

investigations and remedial activities are discussed in Sections 9 and 10, respectively (SMC 2001).

In 1989, in response to Industrial Wastes Control Section (IWCS) Order 1032 the site submitted an inventory of storage tanks, capacities, and contents to NYCDEP. The inventory included a 3,000-gallon steel UST used to store No. 2 fuel oil and three 1,500-gallon USTs, containing methanol, xylene, and isopropanol. Toluene was stored in one of the 1,500-gallon tanks briefly in the mid-1970s (Olenberg 1989). Tanks have been closed or removed. Historical UST locations are shown on Attachment 2. The following table summarizes information available from the inventory provided to NYCDEP by the site in 1989 and the NYSDEC Bulk Storage Database (Olenberg 1989; EDR 2010; NYSDEC 2011):

Tank ID	Date Installed	Tank Status	Tank Location	Capacity (gallons)	Product
001	05/01/76	Closed prior to 1991	USTs; east side of 32-38 37th Street building	3,000	No. 2 fuel oil
002	Not provided	Closed prior to 1991		1,500	Empty
318-67-1	03/18/67	Closed prior to 1991		1,500	Isopropanol
318-67-2	03/18/67	Closed prior to 1991		1,500	Methanol (toluene stored in this tank briefly in the 1970s)
226-83	03/83	Closed prior to 1991		1,500	Xylene

Tank ID	Date Installed	Tank Status	Tank Location	Capacity (gallons)	Product
S-1	Not provided	Process tanks and equipment were removed during site closure activities in the early 1990s (LTR 1994b).	ASTs; interior 32-38 37th Street building	2,000	Sodium nitrate (40% aqueous)
S-2				2,000	Propionic acid
S-3				2,000	USP White Oil
S-4				2,000	Caustic (25% aqueous)
S-5				2,000	Caustic (25% aqueous)
S-6				1,200	Xylene
S-7				1,200	Propiophenone
S-8				2,000	Caustic (25% aqueous)
S-9				2,000	Sodium Nitrate (40% aqueous)
T-16				750	Propiophenone
T-2				600	Propiophenone

Notes:

AST – aboveground storage tank

LTR – Land Tech Remedial, Inc.

No. – number

USP – United States Pharmacopeias

UST – underground storage tank

In March 1990, NYCDEP investigators concluded that additional spill control and pretreatment equipment was needed at the site and required that the site install a new oil separator, a pH strip chart with an audio alarm, an explosivity meter with a strip recorder, visual and audio alarms, and a mixer in the existing neutralization tank (Tong 1990). NYCDEP required that the oil separation occur prior to neutralization; however, the City code required oil separators to be installed between the neutralizer and the discharge point, and as a result, the installation was delayed (Sidamon-Eriftoff 1991).

Three primary areas of soil contamination, including xylene, ethylbenzene, and toluene have been identified at the site and are shown on Attachment 1. Soils beneath the floor of the 52-20 37th Street building, a.k.a. the Main Production Building (from approximately 3 to 20 feet bgs), have been impacted by xylene, toluene, and ethylbenzene released from leaks from the main receptor pit, a floor drain sump, and wastewater system piping. Soils beneath

the former wastewater trench connecting Lot 24 to the Main Production Building (from approximately 3 to 17 feet bgs) were impacted by releases from the wastewater system, including leaks in the trench and the connection to the yard receptor pit (additional information concerning the on-site wastewater treatment system and trench is discussed in Section 9.3.1.). Soils in the yard area northwest of the 52-20 37th Street building (from the ground surface to approximately 7 feet bgs) were impacted by surface spills (SMC 2001).

7.2 Overwater Activities

The site is not adjacent to Newtown Creek. Information regarding overwater activities was not identified in documents available for review.

7.3 Spills

Spills at the site that are documented in the NYSDEC Spill Incidents Database are summarized as follows:

NYSDEC Spill No.	Spill Date	Close Date	Material Spilled	Remarks
8906125/ 8906126	09/20/89	06/13/95	Xylene, toluene	Noxious fumes were discovered in two manholes downhill from 52-20 37th Street. Field readings were taken by NYCDEP investigators. Roehr Chemicals, Inc., was cited for violations (EDR 2010).
8709604	02/11/88	03/04/03	No. 4 fuel oil	A release occurred from a 3,000-gallon UST (NYSDEC 2011).
8907364	10/25/89	02/13/03	Methanol and isopropyl alcohol	Releases occurred from two 1,500-USTs (NYSDEC 2011).
9005231	08/11/90	11/06/90	Organic solvents	A tank at 52-10 37th Street overflowed into the sewer system. The impacted soil was characterized and disposed of off site. Approximately 500 gallons were released (EDR 2010).

Notes:

EDR – Environmental Data Resources, Inc.

No. – number

NYCDEP – New York City Department of Environmental Protection

NYSDEC – New York State Department of Environmental Conservation

UST – underground storage tank

8 PHYSICAL SITE SETTING

8.1 Geology

Subsurface investigations conducted at the site indicate that surface soils are underlain by medium to coarse grained sand, with some fine gravel, deposited by glacial streams. Dense till, consisting of a mixture of silty sand, cobbles, and sporadic lenses of clay, was encountered beneath on-site buildings and may have been deposited by glacial ice. The surficial boundary between the till and the sandy deposits is thought to be near the lot line separating Lot 23 from Lot 24 (LTR 1994b). Bedrock was encountered beneath the site at 36 feet bgs near MW-7 and at 29 feet bgs near S-1. However, it was not encountered in nearby borings; consequently, the surface of the bedrock is thought to be irregular, containing dips and rises (LTR 1994b).

8.2 Hydrogeology

Groundwater has been encountered at the site at approximately 30 feet bgs and exists within a geologic deposit consisting of sand, cobbles, and boulders. Discontinuous clay lenses have been identified in some borings (LTR 1994a). Perched groundwater has been encountered at approximately 20 feet bgs in MW-1A, B-1, B-2, S-1 and S-2. The presence of perched water has been attributed to the irregular surface of the bedrock (LTR 1994b).

Groundwater at the site flows to the southwest toward Calvary Cemetery. Groundwater contours are shown on Attachment 4. Groundwater velocities have been estimated at 7.4 feet per day (YWC 1990). Groundwater flow is tidally influenced, so velocities decrease slightly during high tides (LTR 1994a).

9 NATURE AND EXTENT (CURRENT UNDERSTANDING OF ENVIRONMENTAL CONDITIONS)

Several subsurface investigations have been conducted at the site since 1989 and are briefly summarized in the following section. Data collected during these investigations is addressed in Sections 9.1, 9.2.3, and 9.5. Eleven monitoring wells have been installed on the site and on nearby properties. MW-1, MW-2, MW-3, and MW-4 were installed in 1990 (YWC 1990). MW-1 was destroyed by the New York City Sanitation Department in 1991. MW-5

was installed in 1991. MW-6, MW-7, and MW-8 were installed in January 1994 (LTR 1994a). MW-1A, MW-9, and MW-10 were installed in June 1994 (LTR 1994b). Two downgradient monitoring wells, MW-11 shallow/deep (S/D) and MW-12S/D, were installed in September and October 1998 (SMC 2001). Monitoring well locations are shown on Attachment 1. Monitoring well screens are 10 feet long and were installed in the upper portion of the aquifer between approximately 16 (minimum) and 37 (maximum) feet bgs (SMC 2001). MW-11S/D is screened from approximately 22 to 32 feet bgs (shallow) and 97 to 102 feet bgs (deep). MW-12S/D is screened from approximately 26 to 36 feet bgs (shallow) and 52 to 62 feet bgs (deep). Details of monitoring well construction are available in Attachment 3 (LTR 1994b; NYSDEC 2001).

1989/1990 Soil and Groundwater Investigation

YWC Technologies, Inc. (YWC) conducted soil and groundwater investigations at the site in 1990 after tank integrity testing indicated that the methanol and isopropanol USTs (1,500-gallon capacity each) and associated piping were leaking. A third 1,500-gallon UST at the site contained xylene; however, integrity testing did not indicate that a xylene release had occurred. Chlorinated solvents, including PCE and TCE, were detected in groundwater samples and a shallow soil sample that was collected at MW-4 (located in the sidewalk near the front door on the office on Greenpoint Avenue), as shown on Attachment 5. Roehr claimed that it did not use or store chlorinated solvents at the site. YWC attributed the solvents to an off-site source (YWC 1990).

NYSDEC identified several deficiencies in the 1990 report, including the elevated methanol detection limit (1,000 parts per billion [ppb]) and the failure to address isopropanol concentrations, and NYSDEC required that additional studies be conducted at the site (LaGrotta 1990).

1991 Site Closure Investigations

In November 1991, three groundwater samples and 11 soil samples were collected and analyzed during closure activities at the site. Groundwater samples were collected from MW-2, MW-3, and MW-4. Soil samples were collected at 2 feet bgs. Soil sample locations are shown on Attachment 6 and include the methanol tank pit, the xylene tank pit, the wastewater trench, and the interior of on-site buildings (known as the 52-28 37th Street building, the 52-20 37th Street building, and the Starr Avenue building). Samples were analyzed for volatile organic compounds (VOCs). Analytes detected in soil samples included xylene and ethylbenzene. Groundwater samples contained chlorinated solvents, including PCE and TCE. YWC recommended additional investigation of elevated xylene concentrations in soils under the 52-28 37th Street building (Dirienzo 1991).

1992 Xylene Contamination Extent Study

In January 1992, additional subsurface investigations were conducted at the site to determine the extent of the xylene contamination identified in the 1991 investigation. Soil borings were completed in eight locations and samples were collected at 3- to 5-foot intervals until water was encountered (from approximately 5 feet bgs to 20 to 30 feet bgs). Perched water was encountered at 20 feet bgs in some locations and groundwater was present at 30 feet bgs. Two soil samples were collected at 5 feet bgs near the western boundary of the building. Groundwater samples were collected from a newly installed monitoring well (MW-5). Samples were analyzed for VOCs.

The results indicated that xylene and ethylbenzene contamination extended approximately 15 feet bgs beneath the 52-28 37th Street building. Xylene (25 ppb) was detected in the groundwater sample collected in MW-5. YWC recommended that this well be resampled, as the initial sample was collected immediately after well development (YWC 1992). In June 1992, MW-5 was resampled and VOC concentrations in the sample were below detection limits (Dirienzo 1992).

1993/1994 Preliminary Site Assessment

A Preliminary Site Assessment (PSA) was conducted in 1993 and 1994 by Land Tech Remedial, Inc., (LTR) for Aceto Corporation (Aceto). The PSA was completed per the requirements of Consent Order #D2-0005-93-04 between Aceto and NYSDEC. A soil vapor

extraction (SVE) system was installed in December 1993 and is discussed in Section 10. Groundwater samples were collected from three existing (MW-2, MW-3, and MW-5) and three newly installed monitoring wells (MW-6, MW-7, and MW-8). During well installation, soil samples were collected at 5-foot intervals from the surface to 15 feet bgs. Additional soil samples were collected from the base of the main receptor pit (LTR 1994a).

Samples were analyzed for VOCs and Base Neutral Acids (BNAs). Soil samples collected in the receptor pit were analyzed for leachable metals. Xylene and ethylbenzene were detected in groundwater samples collected from all monitoring wells except MW-2. The concentrations at MW-6 and MW-7 were several magnitudes higher than those detected in MW-3, MW-5, and MW-8. Chlorinated solvents, including PCE, TCE, and DCE, were detected in samples collected from all monitoring wells except for MW-6 and MW-7. Benzene, toluene, xylene, and ethylbenzene were detected in samples collected at less than 4 feet bgs near MW-7 and MW-8. Concentrations in soil samples collected at depths greater than 4 feet bgs were below detection limits (LTR 1994a).

1994 Supplemental Preliminary Site Assessment

Following the PSA, LTR performed a Supplemental Preliminary Site Assessment (SPSA) to further define the extent of soil and groundwater contamination at the site. Three new monitoring wells were installed (MW-1A, MW-9, and MW-10) in June 1994. Eight of the ten total monitoring wells were sampled, and samples were analyzed for VOCs. Soil samples were collected at 3 to 5-foot intervals during the installation of MW-1A, MW-9, and MW-10 (LTR 1994b).

Xylene, ethylbenzene, toluene, and acetone were detected in MW-1A, MW-3, MW-5, MW-6, MW-7, and MW-8. PCE, TCE, and DCE were present above detection levels in MW-9 and MW-10. Xylene and ethylbenzene were detected in subsurface soil samples collected in B-3 and S-1 (LTR 1994b).

2001 Remedial Investigation/Feasibility Study Report

The Remedial Investigation/Feasibility Study (RI/FS) was conducted by SMC Environmental (SMC) in accordance with the requirements of Consent Order #D-2-0002-96-11, which was signed by Roehr and NYSDEC and was effective March 31, 1997. Field investigations

occurred in April and May 1997. Eleven soil borings were completed in the 52-28 37th Street building. Soil samples were collected from the borings at 3- to 5-foot intervals from the ground surface to first encountered water (approximately 26 to 29 feet bgs). Six samples per boring were analyzed for VOCs and the sample from each boring with the highest total VOC concentration was analyzed for acetone. Groundwater samples were collected from the ten existing monitoring wells and sampled for VOCs (SMC 2001).

Sixteen soil gas samples were collected in the Lawn Area (off site), as shown on Attachment 1. Soil gas samples were collected at 3 to 5 feet bgs and screened in the field for VOCs with a photoionization detector (PID). Selected samples were analyzed for VOCs. Indoor air samples were collected in the basement of the 36-19 Starr Avenue building and two nearby off-site residential buildings. One sample from each building was analyzed for xylene, ethylbenzene, toluene, and benzene (SMC 2001).

2001 to 2011 Ongoing Quarterly Groundwater Monitoring

Following the RI/FS a Record of Decision (ROD) was issued to the site by the NYSDEC. The ROD required the site to design and implement an Operations, Maintenance, and Monitoring (OM&M) program to ensure that the interim remedial measures and quarterly groundwater monitoring continue at the site. Remedial activities are discussed in Section 10 (NYSDEC 2001). The most recent Periodic Review Report and Annual OM&M Report available for review was submitted to NYSDEC in April 2011, and these reports summarized activities at the site in 2010 (Arcadis 2011).

9.1 Soil

Soil Investigations

☒ Yes ☐ No

Bank Samples

☐ Yes ☐ No ☒ Not Applicable

Soil-Vapor Investigations

☐ Yes ☒ No

Three primary areas of soil contamination, including xylene, ethylbenzene, and toluene have been identified at the site and are shown on Attachment 7. Soils beneath the floor of the 52-20 37th Street building, a.k.a. the Main Production Building (from approximately 3 to

20 feet bgs), have been impacted by xylene, toluene, and ethylbenzene released from leaks from the main receptor pit, a floor drain sump, and wastewater system piping. Soils beneath the former wastewater trench connecting Lot 24 to the Main Production Building (from approximately 3 to 17 feet bgs) were impacted by releases from the wastewater system, including leaks in the trench and the connection to the yard receptor pit. Soils in the yard area northwest of the 52-20 37th Street building (from the ground surface to approximately 7 feet bgs) were impacted by surface spills (SMC 2001). Selected soil sampling results are summarized in the following table:

Analyte	Units	Minimum Soil Concentration	Maximum Soil Concentration
Surface (< than 2 feet bgs)			
CVOCs			
Tetrachloroethene	ppb	<5	49
Methylene chloride	µg/kg	<5	830
VOCs			
Acetone	µg/kg	<5	1,900
Toluene	µg/kg	<5	460
2-Butanone	µg/kg	<1,200	3,300
Ethylbenzene	µg/kg	<5	270,000
Benzene	µg/kg	<5	176
Xylene (total)	µg/kg	<5	1,500,000
Subsurface (> than 2 feet bgs)			
VOCs			
Xylene	ppb	<5	2,000,000
Ethylbenzene	ppb	<5	370,000
Toluene	µg/kg	<5	37,000
CVOCs			
Methylene chloride	µg/kg	<10	500

Notes:

µg/kg – microgram per kilogram

bgs –below ground surface

CVOC – chlorinated volatile organic compound

ppb – parts per billion

VOC – volatile organic compound

9.2 Groundwater

Groundwater Investigations	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
NAPL Presence (Historical and Current)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Dissolved COPC Plumes	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Visual Seep Sample Data	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable

9.2.1 Groundwater Investigations

Groundwater investigations (summarized in the introduction to Section 9) have identified dissolved contaminants, including VOCs (xylene, ethylbenzene, and acetone) and chlorinated solvents (PCE, TCE, and DCE) in shallow groundwater beneath the site. Roehr claimed that it did not use or store chlorinated solvents at the site and those chemicals' presence was attributed to an off-site source (NYSDEC 2001).

9.2.2 Dissolved Contaminant Plume

A xylene plume is thought to exist beneath the site and be migrating south from the site beneath Calvary Cemetery, as shown on Attachment 8. In 1999, additional monitoring wells were installed to determine whether contaminated groundwater was migrating off site. MW-11S/D was installed in the southern-most portion of the site, near the intersection of 37th Street and Starr Avenue. MW-12S/D was installed across 37th Street (downgradient) from the site. The highest xylene and ethylbenzene concentrations detected in groundwater samples collected from these wells occurred during the first sampling event. Xylene and ethylbenzene concentrations in samples collected from MW-11S in 1998 were 105,000 and 18,000 micrograms per liter ($\mu\text{g/L}$), respectively. Xylene and ethylbenzene concentrations in samples collected from MW-12S/D were 81,300 and 14,000 $\mu\text{g/L}$, respectively. Since that time, concentrations in samples collected from both wells have been variable (NYSDEC 2001; Arcadis 2011). A cumulative groundwater data summary is included as Attachment 8. Selected groundwater sampling results are summarized in the following table:

Analyte	Units	Minimum Groundwater Concentration	Maximum Groundwater Concentration
CVOCs			
1,1,1 – trichloroethane	µg/L	<5	8
Trichloroethene	µg/L	<5	17
Tetrachloroethene	µg/L	<5	99
VOCs			
1,2-Dichloroethene	µg/L	<5	13
Acetone	µg/L	<5	560,000
Xylene	µg/L	<5	88,000
Ethylbenzene	µg/L	<5	21,000
Toluene	µg/L	<5	66

Notes:

µg/L – microgram per liter

CVOC – chlorinated volatile organic compound

VOC – volatile organic compound

9.2.3 Groundwater Summary

Groundwater has been encountered at the site at approximately 30 feet bgs and flows to the southwest toward Calvary Cemetery. Perched groundwater has been encountered in some areas of the site at approximately 20 feet bgs. Groundwater investigations have identified dissolved contaminants, including xylene, ethylbenzene, and acetone, in shallow groundwater beneath the site. These contaminants have primarily been attributed to historical releases from the on-site wastewater treatment system and USTs. Chlorinated solvents (PCE, TCE, and DCE) have been detected in groundwater at the site and are thought to have originated off site because those materials were not stored or used on site during Roehr's operations and an on-site source was not identified during remedial investigations (NYSDEC 2001; SMC 2001). A dry cleaning business operated on the northern portion of the site in the 1970s and 1980s (Sanborn 1970, 1979, 1986).

A xylene plume is thought to be migrating south from the site beneath Calvary Cemetery, as shown on Attachment 7 (NYSDEC 2001). The extent of the plume was delineated by MW-3, MW-8, MW-11S/D, and MW-12S/D (SMC 2001). Xylene and ethylbenzene were detected

in samples collected from MW-11S in 2011. Cumulative groundwater data tables are included as Attachments 9 and 10 (Arcadis 2011).

9.3 Surface Water

Surface Water Investigation

☐ Yes ☒ No

SPDES Permit (Current or Past)

☐ Yes ☒ No

Industrial Wastewater Discharge Permit (Current or Past)

☐ Yes ☒ No

Stormwater Data

☒ Yes ☐ No

Catch Basin Solids Data

☐ Yes ☒ No

Wastewater Data

☒ Yes ☐ No

9.3.1 Stormwater and Wastewater Systems

Chemical manufacturing at the site occurred in the 36-19 Starr Avenue and the 52-20 and 52-28 37th Street buildings. The Starr Avenue building discharged clear, non-contact cooling water or steam condensate to the municipal sewer. The 37th Street buildings discharged a combination of waste and cooling water to the sewer located in 37th Avenue via parallel pipes (Olenberg 1988a).

On July 15, 1991, the facility ceased manufacturing operations and process water discharges to the municipal sewer (Olenburg 1991). On-site stormwater and wastewater infrastructure was removed in the early 1990s during site remediation (SMC 2001). Information regarding current on-site operations and stormwater and wastewater infrastructure was not included in documents available for review.

This site is within the Bowery Bay WPCP sewershed. Stormwater and wastewater discharges from the site flowed into a combined municipal sewer system. When the combined flows exceeded the system's capacity, untreated CSOs likely discharged to Newtown Creek at Outfall BB-011, located near the Greenpoint Avenue Bridge (NYCDEP 2007).

9.3.2 Industrial Wastewater Discharge Permit

Information reviewed in available records indicates that the site has not been issued an Industrial Waste Discharge permit. On September 12, 1990, following submittal of the BMR, NYCDEP issued a Section 24-524(a) Directive to the site. NYCDEP described the directive as “similar to a permit.” The directive required the site to comply with USEPA categorical standards and the NYCDEP Sewer Use Regulations and included that on-going self-monitoring reports be submitted to NYCDEP (Klein 1988; NYCDEP 1990b).

9.3.3 Sampling Data

In 1987 the USEPA promulgated categorical standards for organic chemicals, plastics, and synthetic fibers manufacturing (40 Code of Federal Regulations [CFR] Part 414). Roehr was required to characterize the discharge from the facility to the municipal sewer by analyzing effluent for 59 pollutants and pH and submitting a Baseline Monitoring Report (BMR) that summarized the results to NYCDEP (Klein 1988; NYCDEP 1990b). Initial sampling conducted in June 1988 indicated that chloromethane, methylene chloride, ethylbenzene, and benzene concentrations exceeded the USEPA categorical standards. A compliance schedule, including follow up testing, was established. Additional 24-hour composite samples were collected in October 1989 (NYCDEP 1989a; Olenburg1988b).

In October 1989, 24-hour composite effluent samples were collected and submitted for analysis for cadmium, chromium, copper, mercury, nickel, and priority pollutant BNA extractable organics, volatile organics, plus n-propyl-benzene, isopropylbenzene, styrene and xylenes (Yoak 1988). Benzene, methylene chloride, ethyl benzene and chloromethane concentrations in the site’s discharge exceeded the compliance levels (NYCDEP 1989b; Olenburg1988b). Additional sampling events occurred in October 1989 and April 1990. Selected results are summarized in the following table:

Report Date	Constituent	Result	Unit	Standard	Source
06/22/88	Chloromethane	370	mg/L	295	(Olenburg1988b)
	Methylene chloride	1,300		170	
	Benzene	320		134	
	Ethyl benzene	1,700		380	

Report Date	Constituent	Result	Unit	Standard	Source
10/04/89	Dichloromethane	7.2	µg/L	Not specified	(NYCDEP 1989a)
	Chloroform	18			
	Benzene	60			
	Toluene	25			
	Ethyl benzene	250			
	Styrene	840			
04/11/90	Chloroform	7.3	µg/L	Not specified	(NYCDEP 1990a)
	Benzene	2,140			
	Toluene	610			
	Ethyl benzene	3,935			
	Styrene	1,125			

Notes:

µg/L – microgram per liter

mg/L – milligram per liter

NYCDEP – New York Department of Environmental Protection

9.3.4 Surface Water Summary

On September 12, 1990, the NYCDEP issued a Section 24-524(a) Directive to the site. The directive required the site to comply with USEPA categorical standards for organic chemicals, plastics, and synthetic fibers manufacturing (40 CFR Part 414) and to submit on-going self-monitoring reports to NYCDEP (Klein 1988; NYCDEP 1990b). NYCDEP inspection reports and analytical results indicate that discharge concentrations from the site exceeded these standards on several occasions. On July 15, 1991, the facility ceased manufacturing operations and process water discharges to the municipal sewer (Olenburg 1991). On-site stormwater and wastewater infrastructure was removed in the early 1990s during site remediation (SMC 2001). Information about the current on-site operations and stormwater and wastewater infrastructure was not included in documents available for review.

9.4 Sediment

Creek Sediment Data

☐ Yes ☐ No ☒ Not Applicable

Information regarding sediment investigations was not identified in documents available for review.

9.5 Air

Air Permit

☒ Yes ☐ No

Air Data

☐ Yes ☒ No

9.5.1 Air Permit

A 1986 RCRA inspection form indicates that the site had a New York State Department of Air Resources air permit (Riordan 1986). In 1990 the site released 10 tons of hydrochloric acid, 500 tons of methanol, and 50,357 tons of xylene to the atmosphere via point and non-point emissions (USEPA 1990). Acci Realty Corp submitted an application for a permit to construct and operate the SVE system to NYSDEC in August 1994. A permit was issued to the site effective October 13, 1994 (NYSDEC 2011). No additional information about the permit was identified in documents available for review.

10 REMEDIATION HISTORY (INTERIM REMEDIAL MEASURES AND OTHER CLEANUPS)

Interim remedial measures at the site included the construction and activation of a SVE system intended to reduce concentrations of volatile contaminants in soil and an air sparging (AS) system intended to reduce concentrations of volatile contaminants in groundwater. Eight SVE wells (SVE-1, SVE-2, SVE-3, SVE-4, SVE-5, SVE-6, SVE-7 [formerly MW-6] and SVE-8 [formerly MW-7]) were installed inside the 52-28 37th Street building in December 1993 and were activated in April 1994. The configuration of the SVE wells is shown on Attachment 11 (LTR 1994a). In November 1994, four additional SVE wells (SVE-A, SVE-B, SVE-C, and SVE-D) and a sparge well (SW-1) were installed and activated in the yard, as shown on Attachment 12. SW-1 was constructed with a 2-foot screen at the top of the bedrock (approximately 36 feet bgs; LTR 1994b). In September and October 1999, additional AS (SS-1, SS-2, SS-3, SS-4, and SS-5) and SVE wells (SV-1, SV-2, and SV-3) were installed and activated along 37th Street, as shown on Attachment 1. The AS wells extend 50 feet bgs and the SVE wells extend 25 feet bgs (NYSDEC 2001).

The ROD concluded that the interim remedial measures were sufficient and no additional actions were necessary. The site was required to design and implement an OM&M program to ensure that the interim remedial measures and quarterly groundwater monitoring

continue at the site. Based on the RI/FS, NYSDEC reclassified the site from a Class 2a site (i.e., work is underway at this site and not yet complete; however, the disposal of hazardous waste has been confirmed and the presence of such hazardous waste, its components, or breakdown products represent a significant threat to the environment or to health) to a Class 4 site (i.e., the site has been properly closed but requires continued site management, consisting of operation maintenance and monitoring; NYSDEC 2001)

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12 ATTACHMENTS

Figures

Figure 1 Site Vicinity Map: Roehr Chemicals, Inc.

Tables

Table 1 Potential Areas of Concern and Transport Pathways Assessment

Supplemental Attachments

Attachment 1 Figure 2: Comparative Groundwater Quality Data (SMC 2001 – Prepared by Handex of Connecticut, Inc.)

Attachment 2 Roehr Chemicals Storage Tanks (Olenberg 1989)

Attachment 3 Figure 2: Groundwater Quality Summary Diagram (LTR 1992b)

Attachment 4 Table 2: Monitoring Well Data Summary (SMC 2001)

Attachment 5	Figure 3: Groundwater Contour Map (YWC 1990)
Attachment 6	Figure 1: Groundwater Contour Map (YWC 1992)
Attachment 7	Figure 3: Extent of Soil Contamination by Source Area (LTR 1994b)
Attachment 8	Figure 1: System Upgrade and Monitoring Well Installation (SMC 2001 – Prepared by Handex of Connecticut, Inc.)
Attachment 9	Table 3: Cumulative Groundwater Quality Data Roehr Chemical Site 1994 through 1999 (SMC 2001)
Attachment 10	Table 3: Cumulative Groundwater Quality Data Summary 1992 – 2011 (Arcadis 2011)
Attachment 11	Plate 1: As Built Drawing Soil Vapor Extraction System (LTR 1994a)
Attachment 12	Figure 5: As Built Drawings Yard Soil Vapor Extraction System Showing Existing Building System (LTR 1994b)

Table 1
Potential Areas of Concern and Transport Pathways Assessment – Roehr Chemicals, Inc.

Potential Areas of Concern	Media Impacted					COPCs													Potential Complete Pathway							
Description of Areas of Concern	Surface Soil	Subsurface Soil	Groundwater	Catch Basin Solids	Creek Sediment	TPH			VOCs			SVOCs	PAHs	Phthalates	Phenolics	Metals	PCBs	Herbicides and pesticides	Dioxins/Furans	Overland Transport	Groundwater	Direct Discharge – Overwater	Direct Discharge – Storm/Wastewater	Discharge to Sewer/CSO	Bank Erosion	Air Releases
						Gasoline-Range	Diesel – Range	Heavier – Range	Petroleum Related (e.g., BTEX)	VOCs	Chlorinated VOCs															
Bulk storage areas (including USTs and ASTs)	√	√	√	?	?	?	?	√	?	√	?	?	?	?	?	?	?	?	?	--	?	--	--	?	--	?
Wastewater treatment system (including trench, main receptor pit, yard receptor pit)	√	√	√	?	?	?	?	?	√	√	√	?	?	?	?	?	?	?	?	--	?	--	--	√	--	?
Processing areas and equipment used in dry cleaning, stone cutting and polishing, pharmaceutical manufacturing, and metal working	?	?	?	?	?	?	?	?	?	√	√	?	?	?	?	?	?	?	?	--	√	--	--	?	--	?
Food packaging areas	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	--	?	--	--	?	--	?

Notes:

√ – COPCs are/were present in areas of concern having a current or historical pathway that is determined to be complete or potentially complete.

? – There is not enough information to determine if COPC is/was present in area of concern or if pathway is complete.

-- – Current or historical pathway has been investigated and shown to be not present or incomplete.

AST – aboveground storage tank

BTEX – benzene, toluene, ethylbenzene, and xylene

COPC – constituent of potential concern

CSO – combined sewer overflow

PAH – polycyclic aromatic hydrocarbon

PCB – polychlorinated biphenyl

SVOC – semi-volatile organic compound

TPH – total petroleum hydrocarbon

UST – underground storage tank

VOC – volatile organic compound

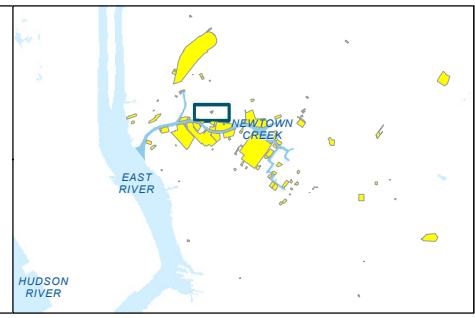
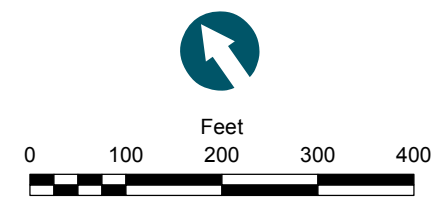
G:\Jobs\110782-01 NewtownCreek\Maps\RI RemedialInvestigation\Historic Data Research\Site Features Mapbook.mxd ckibinger 5/23/2012 5:05:50 PM



- USEPA Sample Locations (Surface and Subsurface)
- Shoreline (NYC Dept. of Information Technology, 2006)
- USGS Nat'l Elev. Dataset 5-foot Contours
- Selected Site Property Boundary
- Neighboring Site Property Boundary

- Outfall Class
- Direct Discharge
 - General
 - Highway Drain
 - Major Stormwater Outfall
 - SPDES
 - Storm Drain

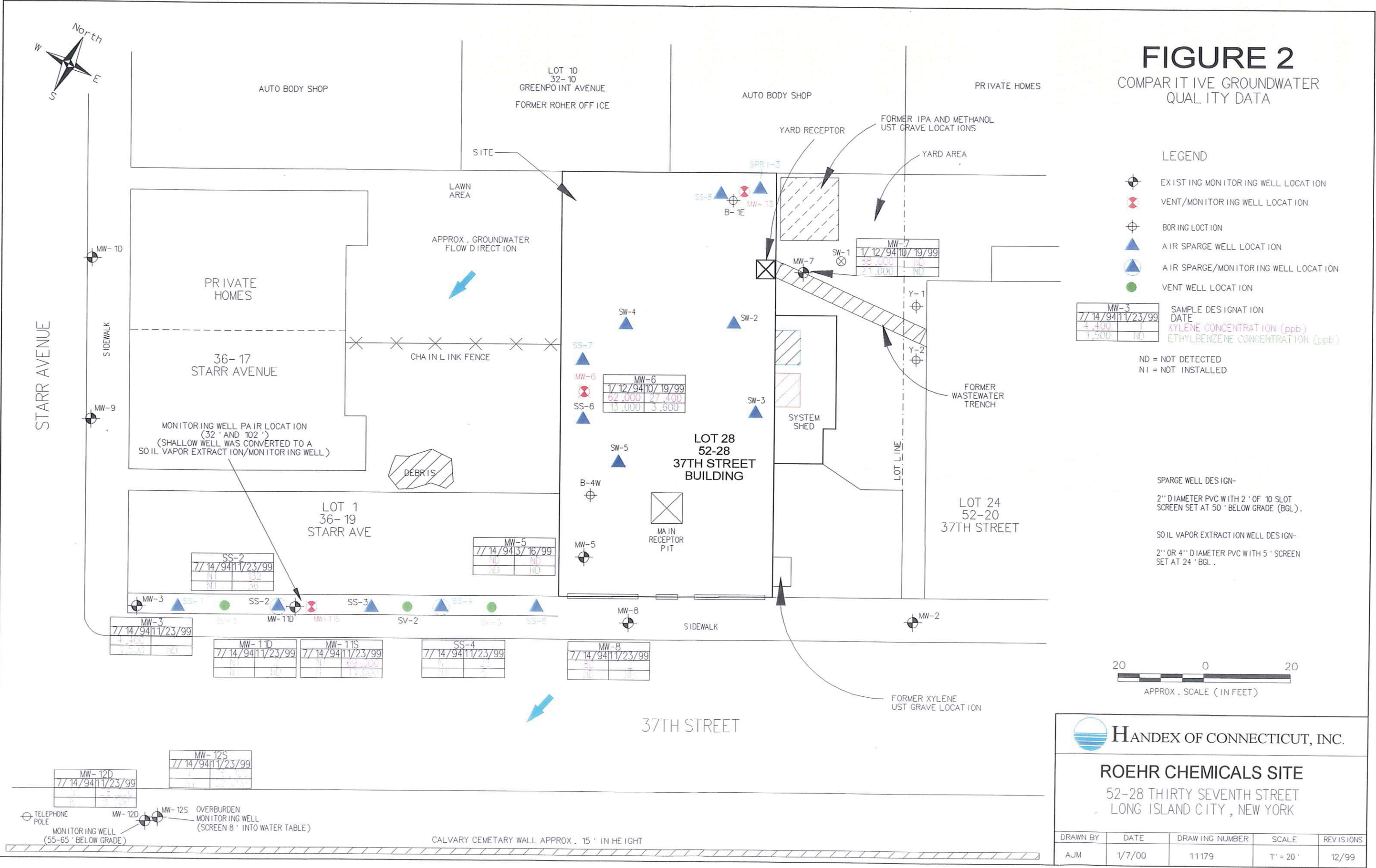
NOTES:
1. Outfall Labeling: BB: Bowery Bay; NC(B/Q): Newtown Creek, Brooklyn/Queens; ST: Stormwater.
2. Outfall locations are preliminary, compiled, estimated data based on New York City Department of Environmental Protection (NYCDEP) maps and tabulated data and other resources. Many outfall locations were taken from the New York City Shoreline Survey Program: Newtown Creek Water Pollution Control Plant Drainage Area, NYCDEP, March 31, 2003. Other locations were taken from an excerpt from a similar report from 2008 (the complete report was not included in files available for review). Finally, some outfall locations were inherited from previous Anchor QEA and Newtown Creek Project work. Latitudinal and longitudinal data provided in the 2003 and 2008 NYCDEP reports were rounded to the nearest second. This resulted in potential outfall location discrepancies of up to approximately 200 feet. All outfall locations are currently under field verification.
3. Aerial Photos: New York State Division of Homeland Security and Emergency Services, 2010.
4. Site Boundaries are based on New York City parcels data.
5. Coarse topographic contours are derived from U.S. Geological Survey 10-meter data.



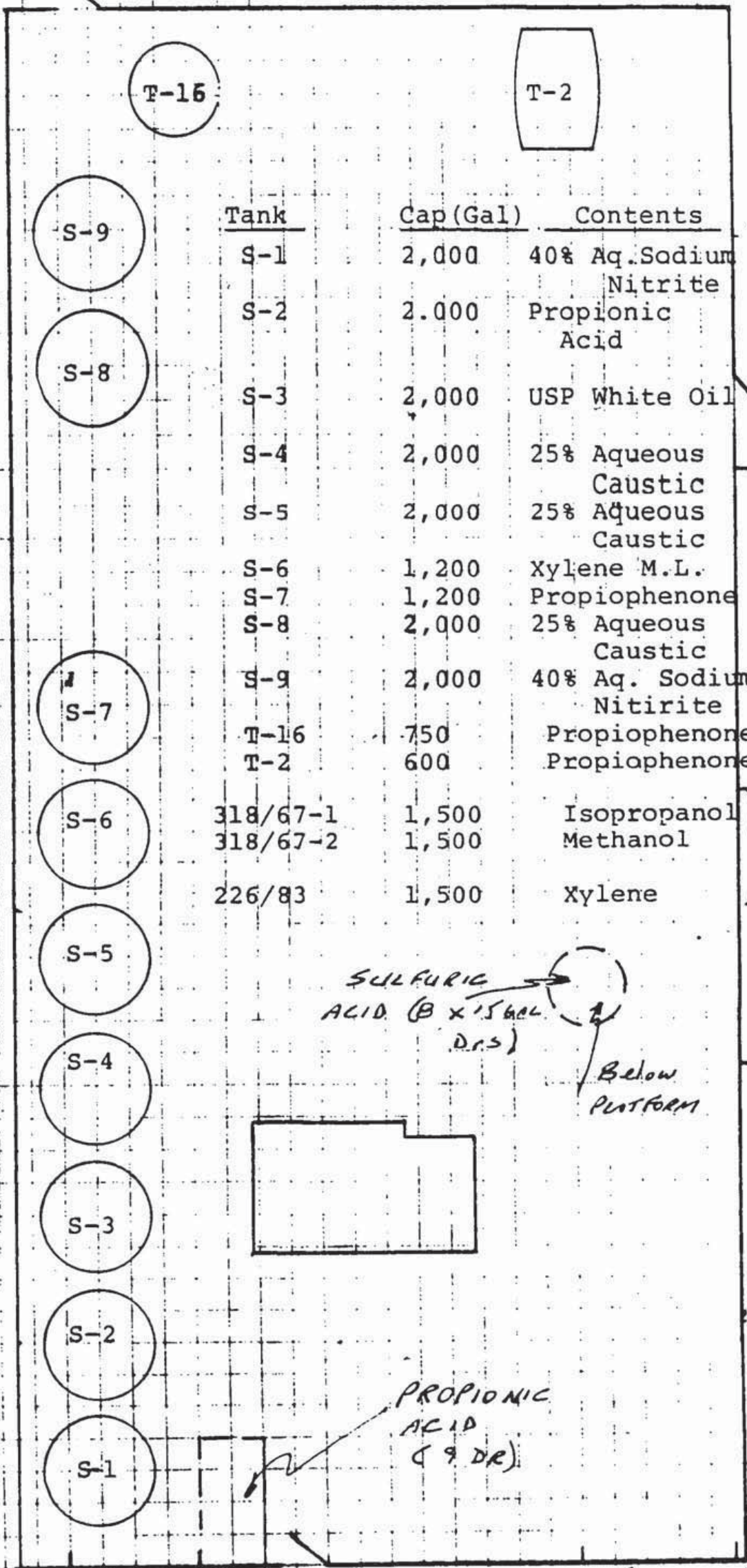
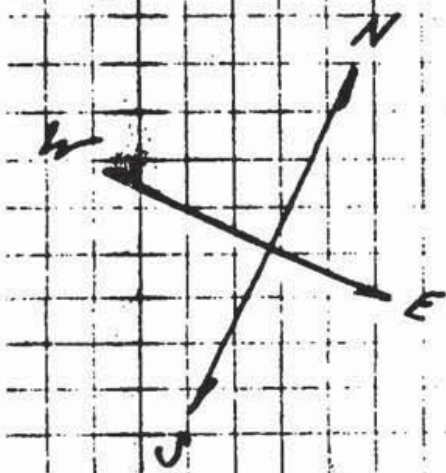
DRAFT

Figure 1
Site Vicinity Map
Draft Upland Site Summary: Roehr Chemicals, Inc.
Newtown Creek RI/FS

SUPPLEMENTAL ATTACHMENTS



ROEH R
CHEMICALS
32-28 37th ST.
LOT-23
STORAGE
TANKS
1st - 10th / 1/87
DWG No. 7 HD



1 2

318/67

Approved Buried Tanks

226/83

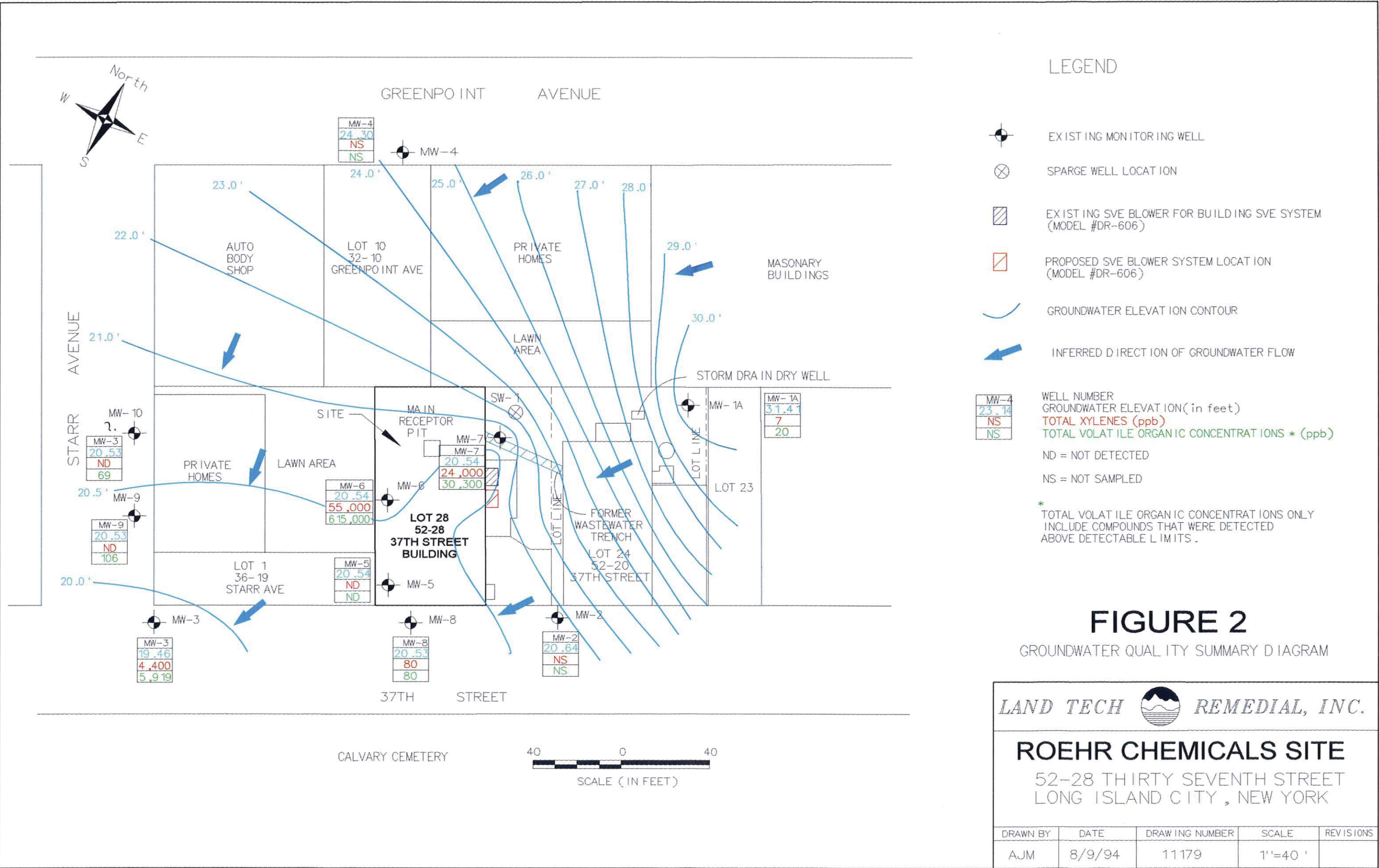


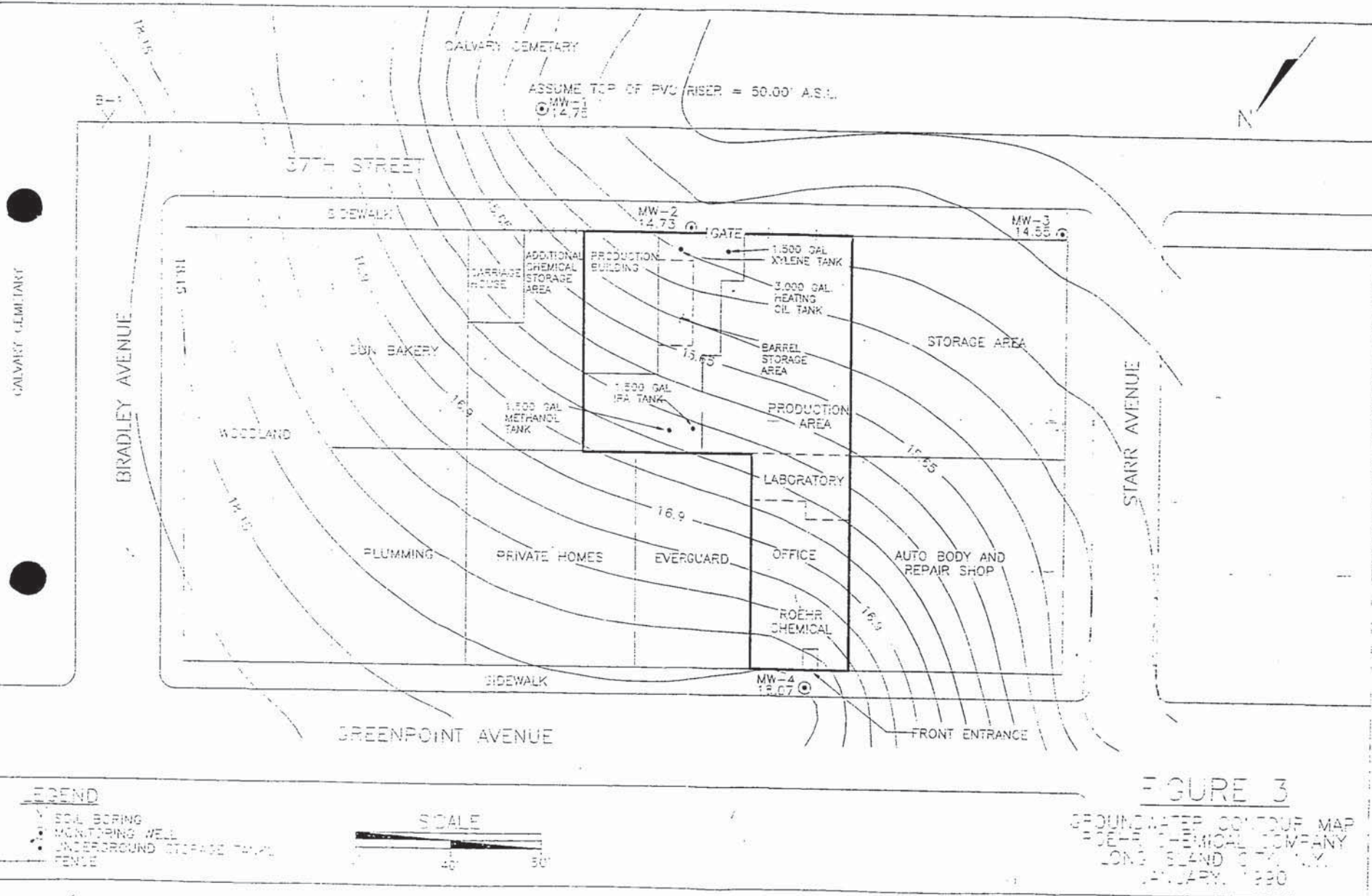
TABLE 2
MONITORING WELL DATA SUMMARY
ROEHR CHEMICAL SITE
LONG ISLAND CITY, NEW YORK

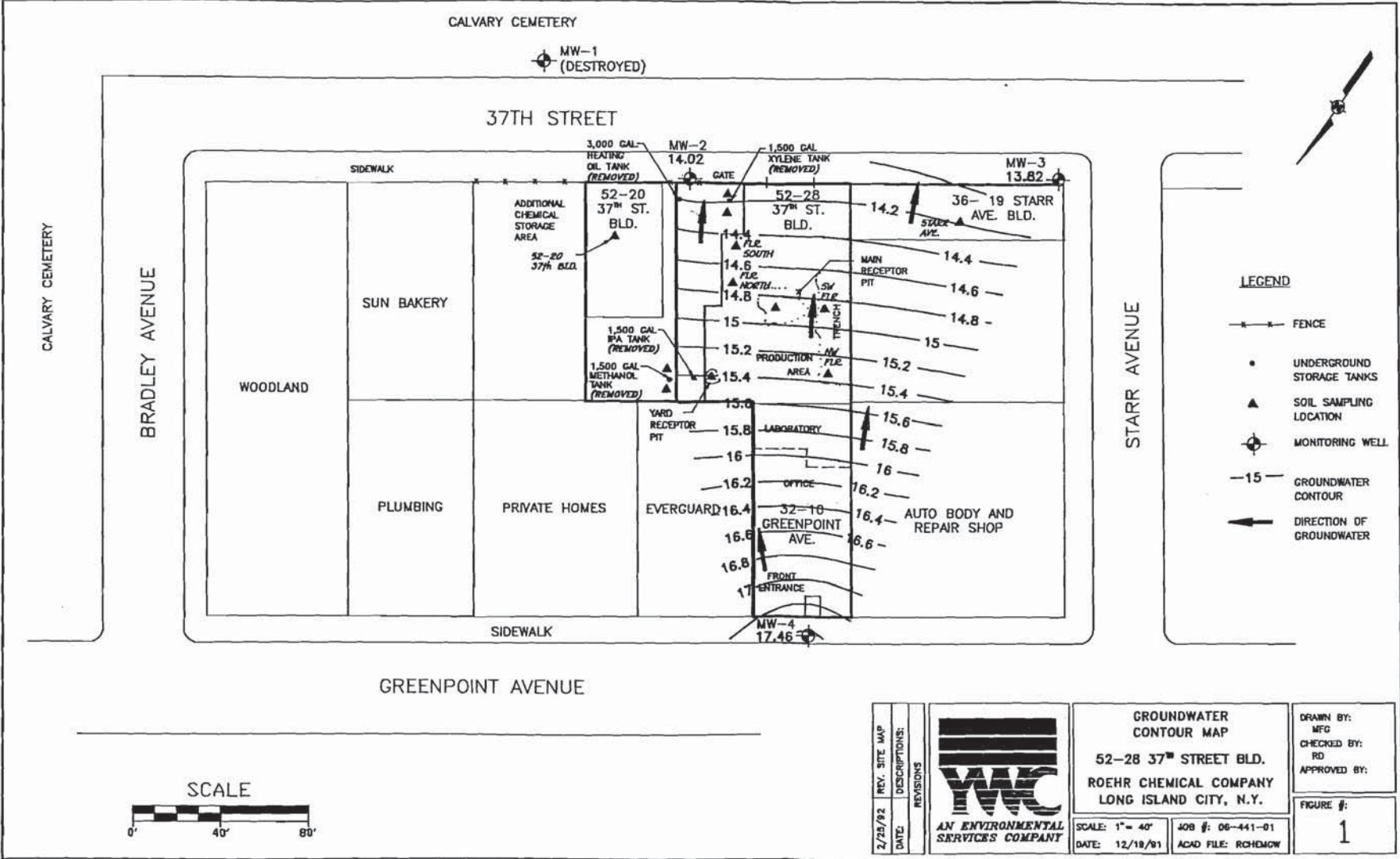
Parameter	Monitoring Well													
	MW-2	MW-3	MW-4	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11S	MW-11D	MW-12S	MW-12D	SS-2	SS-4
Date of Installation	1991	1991	1991	12/12/93	12/7/93	12/7/93	7/6/94	7/6/94	9/10/98	9/10/98	10/5/99	10/9/99	9/21/99	9/22/99
Screened Interval (ft)	26.5 - 36.5	21.9 - 31.9	16.5 - 26.5	26.5 - 36.5	26 - 36	27 - 37	17.75-27.75	17.6 - 27.6	22.5 - 32.5	97 - 102	24 - 34	52 - 62	47.6 - 49.6	47.8 - 49.8
Measured Depth of Well														
From Top of PVC (ft.)	36.5	31.9	26.5	36.5	36	37	27.75	27.6	32.5	102	33.9	61.95	49.6	49.8
Depth of Water Level														
From Top of PVC (ft.)	28.98	26.60	20.43	28.40	30.36	29.5	23.17	22.27	27.69	27.82	27.33	27.41	27.44	28.15
Elevation of Well (Top of PVC)	50	45.91	44.64	49.53	NA	48.9	44.08	43.33	47.33	47.04	47.28	47.48	47.3	46.51
Relative Groundwater Elevation (ft.)	21.02	19.31	24.21	21.13	NA	19.4	20.91	21.06	19.64	19.22	19.95	20.07	19.86	18.36
Height of Water in Casing (ft.)	7.52	5.3	6.07	8.1	5.64	7.5	4.58	5.33	4.81	74.18	6.57	34.54	22.16	21.65

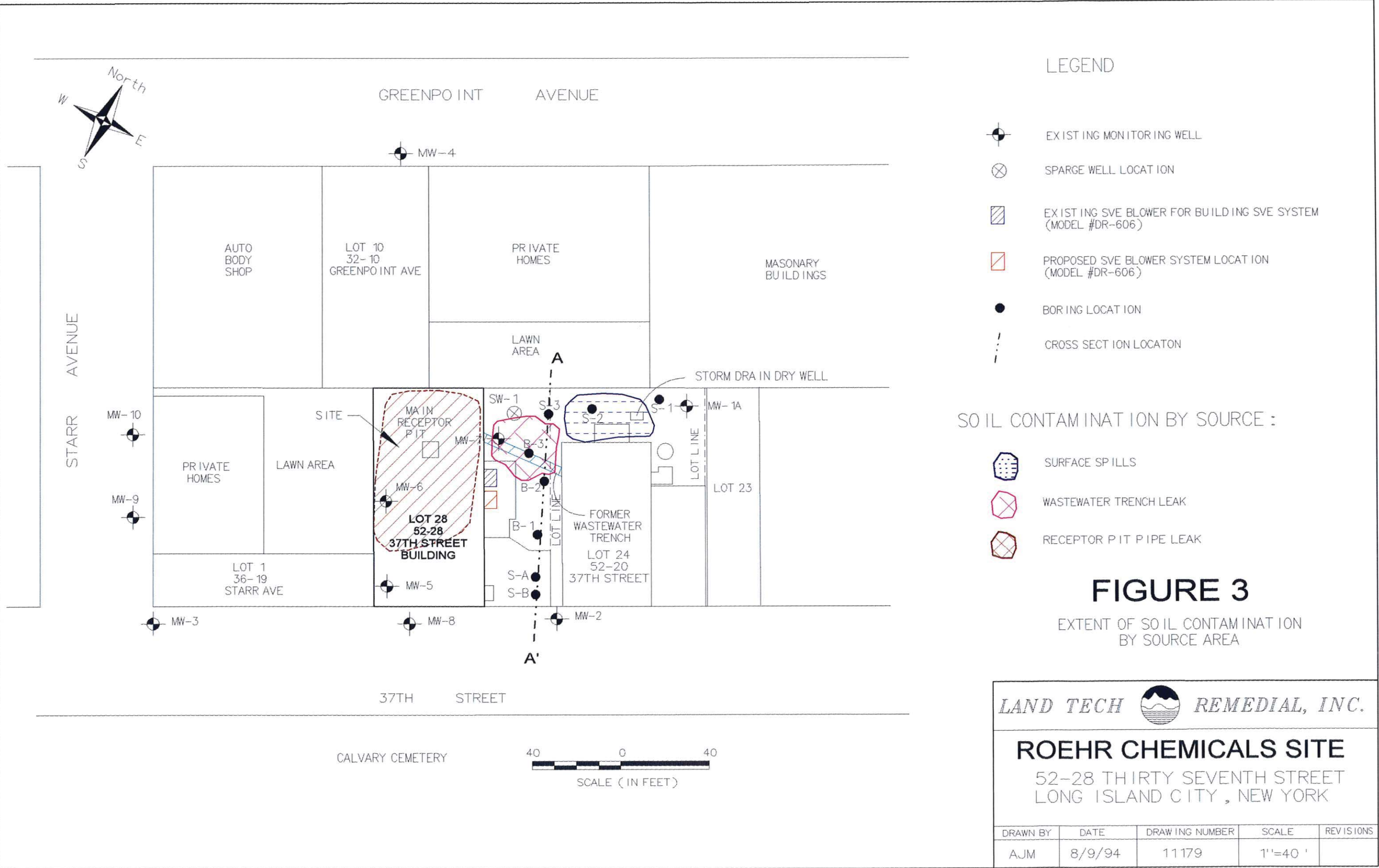
Note: NA - Not available

Elevations are relative to an assumed bench mark of 50 feet, which was arbitrarily denoted for the top of PVC at monitoring well MW-2.

*MW-1, MW-1a and MW-5 were destroyed







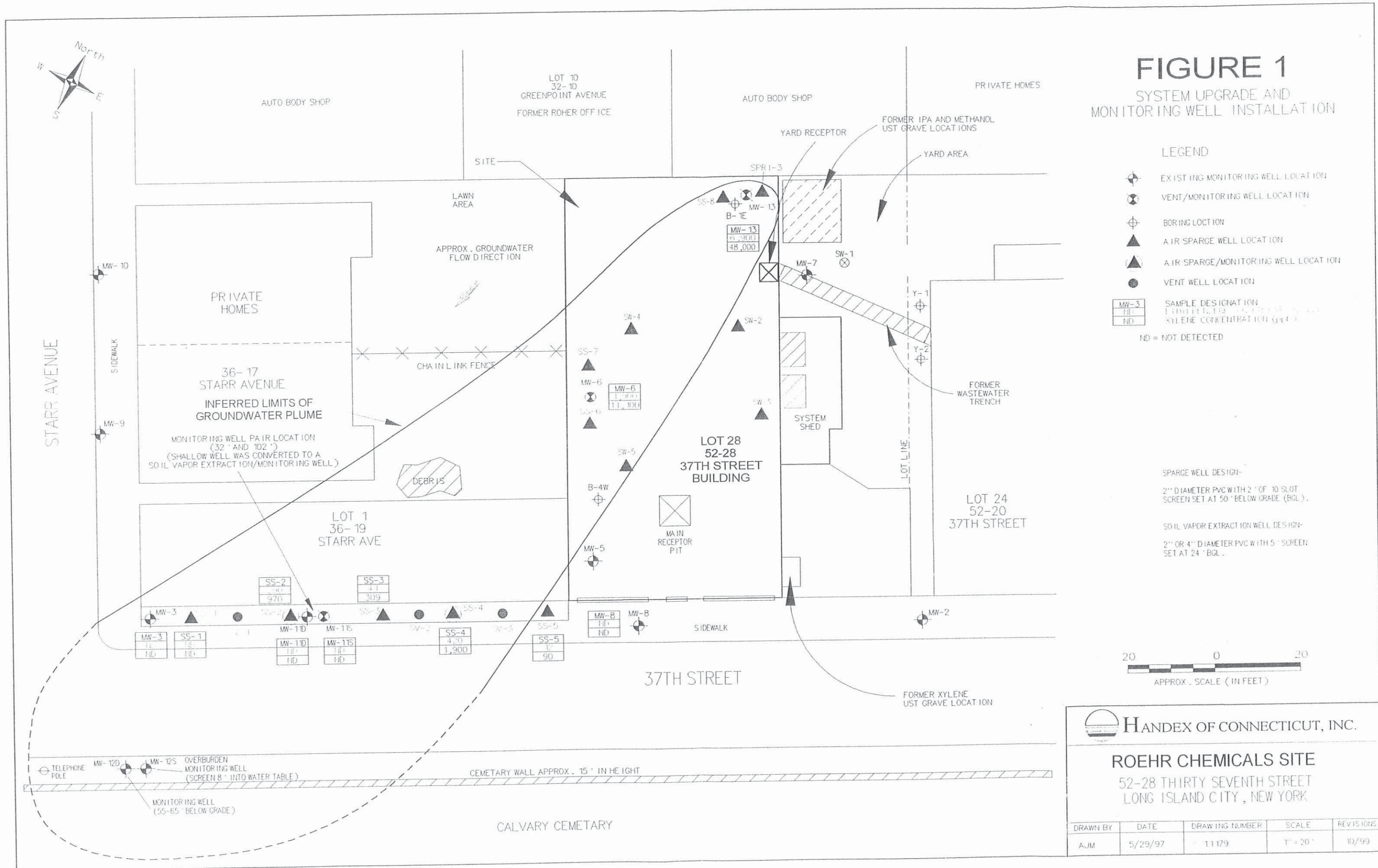


TABLE 3
CUMULATIVE GROUNDWATER QUALITY DATA
ROEHR CHEMICAL SITE
LONG ISLAND CITY, NEW YORK
1994 THROUGH 1999

Well #	Date	Xylenes	Ethylbenzene
MW-1	2/7/1990	U	U
	12/16/1991	NM	NM
	2/2/1992	NM	NM
	1/12/1994	NM	NM
	7/14/1994	NM	NM
	8/3/1994	NM	NM
	3/14/1995	NM	NM
	6/27/1995	NM	NM
	9/26/1995	NM	NM
	4/9/1997	U	U
	1/15/1998	U	U
	4/15/1998	NM	NM
	9/23/1998	NM	NM
	10/8/1998	NM	NM
	3/16/1999	NM	NM
	10/19/1999	NM	NM
	11/23/1999	NM	NM
MW-2	2/7/1990	U	U
	12/16/1991	U	U
	2/2/1992	NM	NM
	1/12/1994	U	U
	7/14/1994	NM	NM
	8/3/1994	NM	NM
	3/14/1995	NM	NM
	6/27/1995	NM	NM
	9/26/1995	NM	NM
	4/9/1997	U	U
	1/15/1998	U	U
	4/15/1998	NM	NM
	9/24/1998	NM	NM
	10/8/1998	NM	NM
	3/16/1999	NM	NM
	10/19/1999	NM	NM
	11/23/1999	NM	NM
MW-3	2/7/1990	U	U
	12/16/1991	U	U
	2/2/1992	NM	NM
	1/12/1994	8	1J
	7/14/1994	4,400	1,500
	8/3/1994	5,400	1,800
	3/14/1995	1,600	2,500
	6/27/1995	8	16
	9/26/1995	480	100
	4/9/1997	25	5
	1/15/1998	25	5
	4/15/1998	1,600	300
	9/23/1998	U	U
	10/8/1998	NM	NM
	3/16/1999	U	U
	10/19/1999	U	U
	11/23/1999	I	U

NOTE: J - Indicates that the concentration of the compound is an estimated value.

U - Indicates that the compound was not detected in the sample.

NA - Indicates that the sample was not analyzed for the compound.

NM - Indicates that the well was not monitored.

B - Indicates that the analyte is found in both the blank and the sample. The results are corrected results.

NI - Indicates that well was not installed.

TABLE 3

**CUMULATIVE GROUNDWATER QUALITY DATA
ROEHR CHEMICAL SITE
LONG ISLAND CITY, NEW YORK
1994 THROUGH 1999**

Well #	Date	Xylenes	Ethylbenzene
MW-4	2/7/1990	U	U
	12/16/1991	U	U
	2/2/1992	NM	NM
	1/12/1994	NM	NM
	7/14/1994	NM	NM
	8/3/1994	NM	NM
	3/14/1995	NM	NM
	6/27/1995	NM	NM
	9/26/1995	NM	NM
	4/9/1997	U	U
	1/15/1998	U	U
	4/15/1998	NM	NM
	9/23/1998	NM	NM
	10/8/1998	NM	NM
	3/16/1999	NM	NM
	10/19/1999	NM	NM
	11/23/1999	NM	NM
MW-5	12/16/1991	NI	NI
	2/2/1992	25	4J
	1/12/1994	25	2J
	7/14/1994	U	U
	8/3/1994	2J	U
	3/14/1995	U	U
	6/27/1995	U	U
	9/26/1995	16	U
	4/9/1997	U	U
	1/15/1998	U	U
	4/15/1998	U	U
	9/23/1998		
	10/8/1998	NM	NM
	3/16/1999	U	U
	10/19/1999	NM	NM
	11/23/1999	NM	NM
MW-6	2/2/1992	NI	NI
	1/12/1994	62,000	13,000
	7/14/1994	55,000	10,000
	8/3/1994	61,000	11,000
	3/14/1995	50,000	5,500
	6/27/1995	24,000	4,400
	9/26/1995	41,000	9,200
	4/9/1997	47,000	13,000
	1/15/1998	47,000	13,000
	4/15/1998	31,000	9,200
	9/23/1998	27,900	6,600
	10/8/1998	NM	NM
	3/16/1999	35,000	8,600
	10/19/1999	27,400	3,600
	11/23/1999	42,000	5,100

NOTE: J - Indicates that the concentration of the compound is an estimated value.

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NA - Indicates that the sample was not analyzed for the compound.

NM - Indicates that the well was not monitored.

B - Indicates that the analyte is found in both the blank and the sample. The results are corrected results.

NI - Indicates that well was not installed.

TABLE 3
CUMULATIVE GROUNDWATER QUALITY DATA
ROEHR CHEMICAL SITE
LONG ISLAND CITY, NEW YORK
1994 THROUGH 1999

Well #	Date	Xylenes	Ethylbenzene
MW-7	2/2/1992	NI	NI
	1/12/1994	88,000	21,000
	7/14/1994	24,000	5,000
	8/3/1994	NM	NM
	3/14/1995	120	22
	6/27/1995	8,200	1,900
	9/26/1995	12,000	2,100
	4/9/1997	U	U
	1/15/1998	U	U
	4/15/1998	NM	NM
	9/23/1998	NM	NM
	10/8/1998	NM	NM
	3/16/1999	NM	NM
	10/19/1999	NM	NM
	11/23/1999	41	5
MW-8	2/2/1992	NI	NI
	1/12/1994	43	8
	7/14/1994	80	1J
	8/3/1994	NM	NM
	3/14/1995	U	U
	6/27/1995	U	U
	9/26/1995	U	U
	4/9/1997	U	U
	1/15/1998	U	U
	4/15/1998	ND	ND
	9/23/1998	U	U
	10/8/1998	NM	NM
	3/16/1999	U	U
	10/19/1999	U	U
	11/23/1999	2	U
MW-9	1/12/1994	NI	NI
	7/14/1994	U	U
	8/3/1994	NM	NM
	3/14/1995	NM	NM
	6/27/1995	U	U
	9/26/1995	NM	NM
	4/9/1997	U	U
	1/15/1998	U	U
	4/15/1998	U	U
	9/23/1998	NM	NM
	10/8/1998	NM	NM
	3/16/1999	NM	NM
	10/19/1999	NM	NM
	11/23/1999	NM	NM

NOTE: J - Indicates that the concentration of the compound is an estimated value.

U - Indicates that the compound was not detected in the sample.

NA - Indicates that the sample was not analyzed for the compound.

NM - Indicates that the well was not monitored.

B - Indicates that the analyte is found in both the blank and the sample. The results are corrected results.

NI - Indicates that well was not installed.

TABLE 3
CUMULATIVE GROUNDWATER QUALITY DATA
ROEHR CHEMICAL SITE
LONG ISLAND CITY, NEW YORK
1994 THROUGH 1999

Well #	Date	Xylenes	Ethylbenzene
MW-10	1/12/1994	NI	NI
	7/14/1994	U	U
	8/3/1994	NM	NM
	3/14/1995	NM	NM
	6/27/1995	NM	NM
	9/26/1995	NM	NM
	4/9/1997	U	U
	1/15/1998	U	U
	4/15/1998	NM	NM
	9/23/1998	NM	NM
	10/8/1998	NM	NM
	3/16/1999	NM	NM
	10/19/1999	NM	NM
	11/23/1999	NM	NM
MW-1A	1/12/1994	NI	NI
	7/14/1994	7	2J
	8/3/1994	NM	NM
	3/14/1995	NM	NM
	6/27/1995	NM	NM
	9/26/1995	U	U
	4/9/1997	NM	NM
	1/15/1998	NM	NM
	4/15/1998	NM	NM
	9/23/1998	NM	NM
	10/8/1998	NM	NM
	3/16/1999	NM	NM
	10/19/1999	NM	NM
	11/23/1999	NM	NM
MW-11S	4/15/1998	NI	NI
	9/23/1998	105,000	18,000
	10/8/1998	12,000	1,600
	10/28/1999	26,000	7,800
	3/16/1999	35,000	9,900
	10/19/1999	80,000	11,000
	11/23/1999	69,000	11,000
MW-11D	4/15/1998	NI	NI
	9/23/1998	2,800	730
	10/8/1998	2,500	640
	10/28/1999	1,230	350
	3/16/1999	1,360	540
	10/19/1999	5	U
	11/23/1999	2	U
MW-12S	3/16/1999	NI	NI
	10/19/1999	81,300	14,000
	11/23/1999	75,100	22,000
MW-12D	3/16/1999	NI	NI
	10/19/1999	26,100	4,600
	11/23/1999	28,200	8,300

NOTE: J - Indicates that the concentration of the compound is an estimated value.

U - Indicates that the compound was not detected in the sample.

NA - Indicates that the sample was not analyzed for the compound.

NM - Indicates that the well was not monitored.

B - Indicates that the analyte is found in both the blank and the sample. The results are corrected results.

NI - Indicates that well was not installed.

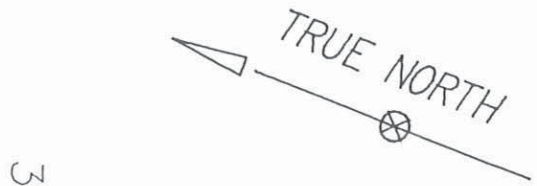
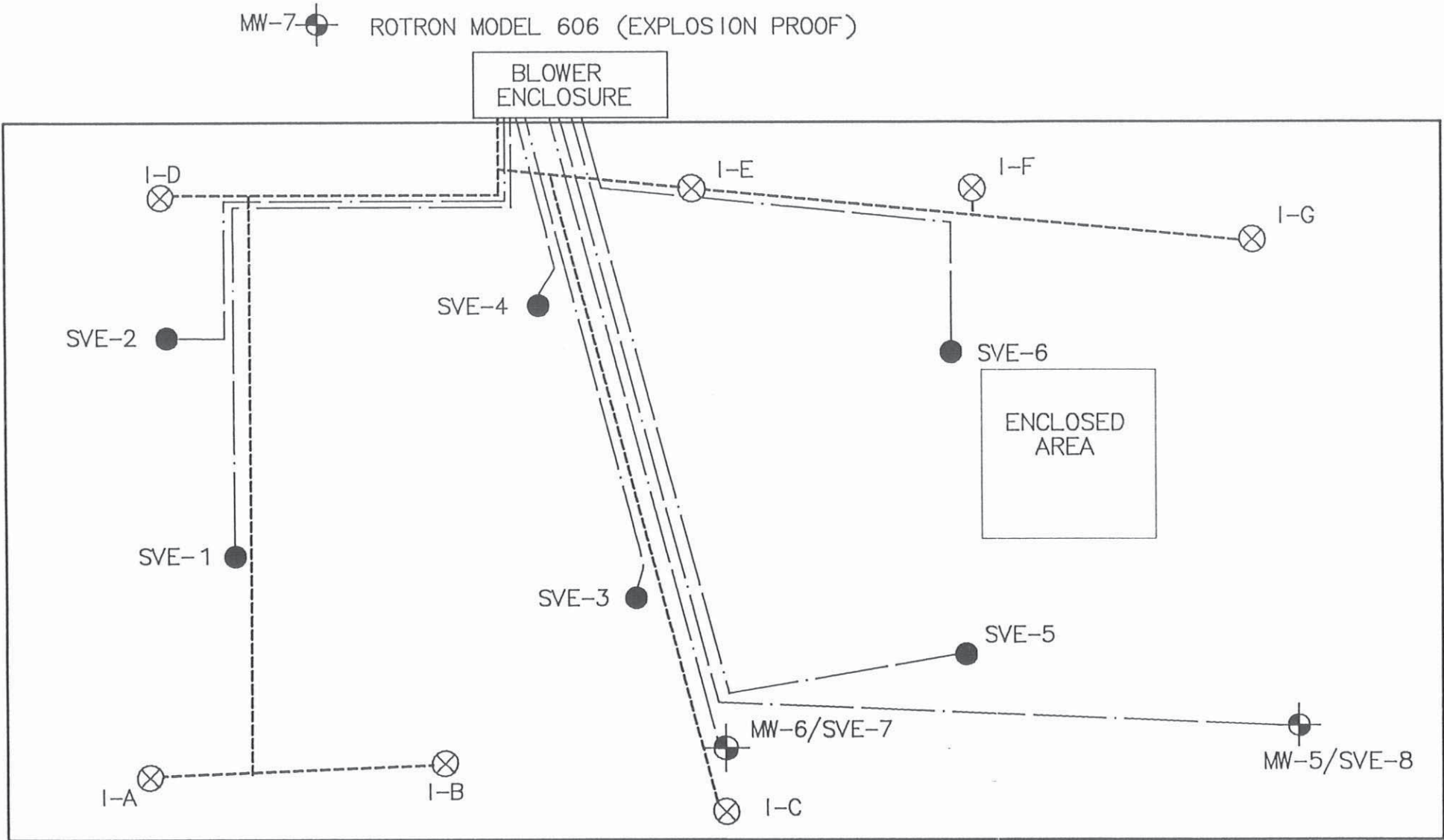
TABLE 3
CUMULATIVE GROUNDWATER QUALITY DATA SUMMARY 1992-2011
ROEHR CHEMICAL SITE
52-28 37TH STREET
LONG ISLAND CITY, NEW YORK

Date	MW-3		MW-6		MW-8		MW-11S		MW-11D		MW-12S		MW-12D		SS-2		SS-4	
	Xylenes	Ethylbenzene	Xylenes	Ethylbenzene	Xylenes	Ethylbenzene	Xylenes	Ethylbenzene	Xylenes	Ethylbenzene	Xylenes	Ethylbenzene	Xylenes	Ethylbenzene	Xylenes	Ethylbenzene	Xylenes	Ethylbenzene
2/2/1992	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/12/1994	8	1	62,000	13,000	43	8	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/14/1994	4,400	1,500	55,000	10,000	80	1	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
8/3/1994	5,400	1,800	61,000	11,000	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
3/14/1995	1,600	2,500	50,000	5,500	ND	ND	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
6/27/1995	8	16	24,000	4,400	ND	ND	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/26/1995	480	100	41,000	9,200	ND	ND	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/9/1997	25	5	47,000	13,000	ND	ND	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/15/1998	25	5	47,000	13,000	ND	ND	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/15/1998	1,600	300	31,000	9,200	ND	ND	105,000	18,000	2,800	730	NI	NI	NI	NI	NI	NI	NI	NI
9/23/1998	ND	ND	27,900	6,600	ND	ND	12,000	1,600	2,500	640	NI	NI	NI	NI	NI	NI	NI	NI
10/8/1998	NM	NM	NM	NM	NM	NM	26,000	7,800	1,230	350	NI	NI	NI	NI	NI	NI	NI	NI
3/16/1999	ND	ND	35,000	8,600	ND	ND	35,000	9,900	1,360	540	NI	NI	NI	NI	NI	NI	NI	NI
9/23/1999	NM	NM	11,100	1,900	NM	NM	ND	ND	ND	ND	NI	NI	NI	NI	970	12	1,900	420
10/19/1999	ND	ND	27,400	3,600	ND	ND	80,000	11,000	5	ND	81,300	14,000	26,100	4,600	2	ND	93	10
11/23/1999	1	ND	42,000	5,100	2	ND	69,000	11,000	2	ND	75,100	22,000	28,200	8,300	132	36	23	5
4/17/2001	NM	NM	ND	ND	NM	NM	6.5	1.7	ND	ND	7,720	1,800	ND	ND	ND	ND	ND	ND
9/19/2001	NM	NM	143	39	NM	NM	54,000	9,700	19	3	484	47	ND	ND	ND	ND	ND	ND
2/7/2002	ND	ND	Dry	Dry	NM	NM	78,000	9,600	ND	ND	7,100	960	ND	ND	ND	ND	ND	ND
4/24/2002	ND	ND	28	2	ND	ND	ND	ND	ND	ND	3,180	420	ND	ND	ND	ND	ND	ND
6/12/2002	NM	NM	99	18	NM	NM	7200	110	ND	ND	6,370	880	ND	ND	14	2	3	ND
9/19/2002	ND	ND	112	31	ND	ND	32,300	3,900	ND	ND	2,810	320	ND	ND	ND	ND	ND	ND
12/11/2002	1	ND	30	ND	ND	ND	2,290	45	9	ND	392	83	2	ND	ND	ND	ND	ND
3/12/2003	ND	ND	11	1	ND	ND	9	ND	1	ND	1,605	140	ND	ND	ND	ND	ND	ND
6/11/2003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	130	2	ND	ND	ND	ND	ND	ND
9/30/2003	ND	ND	NM	NM	ND	ND	18	3	ND	ND	22	ND	ND	ND	ND	ND	ND	ND
12/9/2003	ND	ND	4	ND	ND	ND	112	79	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3/30/2004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6/28/2004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9/29/2004	ND	ND	3	ND	NM	NM	9	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11/19/2004	NM	NM	ND	ND	NM	NM	ND	ND	NM	NM	ND	ND	NM	NM	NM	NM	NM	NM
12/29/2004	NM	NM	ND	ND	NM	NM	ND	ND	NM	NM	6	1	ND	ND	NM	NM	NM	NM
3/29/2005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND
6/28/2005	ND	ND	ND	ND	ND	ND	43	26	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
9/26/2005	ND	ND	ND	ND	ND	ND	39,400	9,000	NM	NM	400	170	8	3	NM	NM	NM	NM
12/21/2005	ND	ND	ND	ND	ND	ND	34	1	ND	ND	1,400	340	ND	ND	NM	NM	NM	NM
3/29/2006	ND	ND	ND	ND	ND	ND	1.2	ND	ND	ND	NM	NM	ND	ND	NM	NM	NM	NM
6/26/2006	ND	ND	ND	ND	ND	ND	ND	ND	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
9/26/2006	NM	NM	ND	ND	NM	NM	ND	ND	NM	NM	ND	ND	NM	NM	NM	NM	NM	NM
12/27/2006	NM	NM	ND	ND	ND	ND	ND	ND	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
3/29/2007	NM	NM	ND	ND	ND	ND	ND	ND	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
6/13/2007	NM	NM	ND	ND	ND	ND	ND	ND	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
9/25/2007	NM	NM	ND	ND	ND	ND	ND	ND	NM	NM	12	ND	ND	ND	NM	NM	NM	NM
12/22/2007	NM	NM	67J	25	ND	ND	21,200	6,600	NM	NM	154J	30	43J	13	NM	NM	NM	NM
3/12/2008	NM	NM	ND	ND	ND	ND	3J	ND	NM	NM	1,600	610	23	6	NM	NM	NM	NM
6/26/2008	NM	NM	ND	ND	ND	ND	ND	ND	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
9/18/2008	NM	NM	ND	ND	ND	ND	5,160	1,600	NM	NM	27	ND	14	ND	NM	NM	NM	NM
12/18/2008	NM	NM	84	25	ND	ND	13,750	3,900	NM	NM	37	11	ND	ND	NM	NM	NM	NM
2/13/2009	NM	NM	ND	ND	ND	ND	32	3.8J	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
5/14/2009	NM	NM	ND	ND	ND	ND	2.7J	ND	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
8/25/2009	NM	NM	ND	ND	ND	ND	52	7.5	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
12/2/2009	NM	NM	ND	ND	ND	ND	2,000	510	NM	NM	3.7 J	1.3 J	2.3 J	ND	NM	NM	NM	NM
3/3/2010	NM	NM	ND	ND	ND	ND	ND	ND	NM	NM	1,400	360	3 J**	ND	NM	NM	NM	NM
6/17/2010	NM	NM	ND	ND	ND	ND	ND	0.97 J	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
9/23/2010	NM	NM	ND	ND	ND	ND	16,000	4,700	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
12/21/2010	NM	NM	ND	ND	ND	ND	3,500	2,100	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM
3/15/2011	NM	NM	ND	ND	ND	ND	15	5	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM

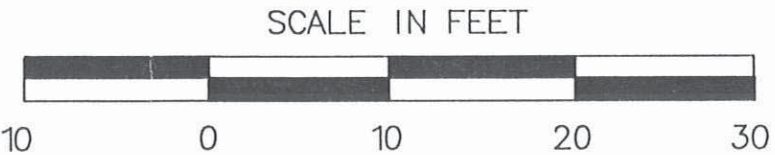
Notes:
ND - Indicates that the compound was not detected in the sample.
NM - Indicates that the well was not monitored during the monitoring event.
NI - Indicates that well was not installed during the monitoring event.
J - Indicates that the value is below the reportable quantity and is only an estimate under the reportable quantity.



PLATE 1
AS BUILT DRAWING
SOIL VAPOR EXTRACTION SYSTEM




37th STREET



LEGEND

- 2" PVC MONITORING WELLS
- 4" PVC GALVANIZED VAPOR EXTRACTION WELLS
- 2" PVC INJECTION WELLS
- 2" PVC VAPOR EXTRACTION CONDUIT
- 2" PVC AIR SUPPLY CONDUIT

NOTES:
- SYSTEM INSTALLED: 12/20/93
- INJECTION WELLS ARE PIPED TO THE ATMOSPHERE.
- MONITORING WELLS MW-5 AND MW-6 WERE RETROFITTED AS SVE POINTS.

LAND TECHREMEDIAL INC.

ROEHR CHEMICAL SITE

52-28 37TH STREET
LONG ISLAND CITY, NEW YORK

DRAWN BY	DATE	DRAWING NUMBER	SCALE	REVISIONS
AJM	1/17/94	10835	1"= 10'	

